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SERVING PIECES AND LOCAL CLAY GLAZES

by

John C. Smolenski .

Candidate for the Master of Fine Arts Degree, in the
College of Fine and Applied Arts of the
Rochester Institute of Technology

Respectfully Submitted on June 2, 1969

Advisors: Professor Hobart Cowles and
Professor Frans Wildenhain

DEDICATION

This work is dedicated to my wife and son. My wife provided me the opportunity and the encouragement that was necessary for me to complete this project. Her constant devotion and patience made my work much more enjoyable. My son added the spark of happiness and life that brought both of us through these final months.

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INTRODUCTION

To serve as introductory remarks to this thesis, I will relate my reasons for selecting my topics as well as my choice of clay as a vehicle for my personal expression as an artist craftsman.

My undergraduate art education left me with a very strong desire to gain proficiency in a satisfying medium. I sought a medium that would suit my personality honestly and directly. After my first real encounter with clay in a summer graduate course, I realized that clay was the material that could give me the subtle qualities that I sought. This most simple of raw materials has a greater spectrum than any other. Yet it may possess the beauty and endurance of Nature herself. It is a material that I can become totally immersed in and will accept nothing less. It is almost a living thing that rewards me according to the degree of understanding I have of it. This understanding seems to come only after much patience, living with, and enjoyment. What I seek from this material is a life of simplicity, beauty and hard work. The clay contains all these essentials of my life's work.

My reasons for selecting serving pieces and local clay glazes are related to my philosophy. The slip glazes seemed a logical starting point for the development of simply-compounded glazes from nature. It is my basic concern to discover the simple beauties that nature has provided. I also want to explore an area that will be more than a series of tests for a thesis; but rather

a series that will give me valuable precedents to follow, regardless of where I set-up shop.

The idea of serving pieces is important to me for several reasons. First, it afforded me the freedom to try many methods of construction. Second, the types of pieces can be as diverse as the kinds of food. Being concerned with the simple pleasures of everyday life, I realize that most of the enjoyment of eating and serving of food has been taken away by plastics and instant foods. I believe that this simple thing can be revitalized by the use of serving pieces designed around the food and functions. They can be made as individual as the people who use them.

My choice of the School for American Craftsmen has proved to be the best possible for my needs. I would like to thank Professors Hobart Cowles and Frans Wildenhain for their patience and help, both technical and inspirational. They both have provided this in abundance. I would also like to thank Dean Harold Brennan for his guidance and aid, without which I would not have had this opportunity. Together, they have taught me that only through total involvement, humility, and hard work for a period of years does one deserve to call himself a craftsman.

CHAPTER 1

Local Clay Glazes

"I feel that the studio potters should pay more attention to this group of glazes. Slip glazes are easy to apply, adhere well, and fire with few, if any, defects. The composition, chemically, is most durable and since additions are few, much time can be saved in glaze preparation."¹

This statement by Mr. Glenn C. Nelson sums up what I have found to be true of the slip glazes that I have worked with. It was also a source which stimulated me some time ago to explore this area of local clay glazes. One thing that Mr. Nelson has omitted is the fact that the slip glazes are almost free.

Initially, I thought that the location of the clays would be a major problem. The difficulty was not locating them, but rather how many could I work on thoroughly and efficiently. The clays were located in a very simple and logical manner. My first clay locating trip was with a fellow potter. Equipped with shovels, plastic bags, and a notebook, we drove south of Rochester. Traveling mostly on secondary roads we were able to look for the obvious locations: stream banks, gravel pits, new excavations and where the roads cut through hills, leaving exposed banks of earth and clay. Within a few hours we had located many different sites from which we took four samples. Only in one instance did we try to dig for the clay. A farmer suggested that we dig down about 16 inches in one of his fields where he thought the soil to be very clay-like, but the search

¹Glenn C. Nelson, Ceramics, New York, 1960, p. 23.

proved unsuccessful. Another clay was found along the shores of Lake Erie west of Erie, Pennsylvania. This site was quite monumental. It was a steep bank about 30 feet high and perhaps one-half mile in length. Two additional samples were brought to me by interested people who were anxious to see what their find would yield in the way of slip glazes. I was now ready to begin testing, having accumulated ten different samples.

Preparing the clay for use was one of the more time-consuming operations of the project. However, the prospect of nearly free glazes made this chore almost enjoyable. This refinement was done by several methods. Since most of my samples were in a plastic state when located, the easiest method was to soak them thoroughly in a pail or basin. The resulting slip could be easily put through various mesh screens, the finest being a 40 mesh. The clay was then dried out, crushed, and resieved and could be easily weighed out for testing. A second method was used on dry samples. The sample was crushed with a hammer and then sieved. The lumps of rock and other impurities were much harder to remove using this method. The third method used was also with dry clay which was relatively free of impurities. This clay was simply run through the small sample grinder in the pottery. This method was very efficient for small quantities of clay. I found the first method to be the most economical for large quantities of clay. It was faster and could be done at home with very little equipment.

The preliminary tests were simply to see if and at what temperature the clays would melt. Tests were made at cones 04, 5

and 9. After this initial series, it seemed that some would need more work than others. At this point, I decided to eliminate about half of the clay samples. The five final clays were chosen because of the variety of locations and the degree of glass formation in the first test, or the lack of it. The reason for the latter was that some would be cone 9 glazes only.

Before discussing each clay individually, I will explain the second test that was conducted. It was set up simply to see the effect of some of the basic fluxes. These were chosen for economy and availability. The series was set up as follows:

1. Whiting, to yield CaO , was used at 5%, 10% and 15%.
2. Dolomite, to yield CaO and MgO , was used at 5%, 10% and 15%.
3. Talc, to yield MgO , was used at 5%, 10% and 15%.
4. Gerstley borate, to yield CaO and B_2O_3 , was used at 5%, 10% and 15%.
5. Petalite was used as a source of lithium, Li_2O .
Petalite also gives some K_2O and Na_2O . It was used at 10%, 20% and 30%.

Slip Glazes

Ionia Slip:

This clay was located along Route No. 64 at Ionia, approximately 12 miles south of Rochester. The deposit occurred where the road is cut through on the side of a hill just outside

the village. The bed of clay was reasonably clean and free of impurities.

The initial tests of the clay alone indicated that the clay would form a very interesting glaze. It had a range of from cone 5 to cone 9 in oxidation or reduction. At cone 5 the glaze was a nice, fat, mat surface. The color ranged from yellow-green to green and showed application thickness very well. This suggested good decoration possibilities. At cone 9 the glaze became semi-transparent where thin and mat where thicker.

The tests with the basic fluxes were an indication to me that the natural glaze was what I wanted. The fluxes showed little improvement in the quality of the glaze. I concluded that I would use this slip as it was without alterations. I had no problems with this glaze and it was used quite extensively. It applied very well to bisqued pots, fired without flaws, and was a completely free raw material.

Through my search to find information about this type of clay, I was fortunate to have a brother who volunteered to conduct an X-ray analysis of four of my clays. This type of analysis is not completely accurate unless it is repetitively run. Since this was the case and it was a complimentary analysis, I settled for knowing the materials present in the clays and the approximate amounts. This information was very helpful in drawing conclusions about the behavior of the clays. I will present the information that I was able to conclude from a lesser number of tests.

The following is a simplified explanation of the X-ray analysis. The clays are finely ground and packed into a container with a glass slide on the bottom. The specimen is turned over and the smooth surface exposed to X-rays. The X-ray defraction shows only crystalline materials as peaks on the graph. If the material is not crystalline, it will show up as a halo and not as a defined peak. The peaks and angles are then measured and calculated according to the tables set up for the materials. This is a very time-consuming and complicated process. To identify accurate percentages requires the more constant repetition of the process. I would like to thank my brother, Chester Smolenski, for his genius and time in this work, certainly no job for a potter.

The analysis of the Ionia clay shows that it is approximately 28 per cent quartz. The remaining 72 per cent is made up of dolomite, calcium carbonate, illite, and chlorite in order of the amount present. The exact breakdown of percentages is not known. The illite and chlorite represent the clay portion of the material. The formulae for these materials are:

| 28 Per Cent | 72 Per Cent |
|-------------------------|--|
| Quartz - SiO_2 | Dolomite - $\text{CaMg}(\text{CO}_3)_2$ |
| | Calcium Carbonate - CaCO_3 |
| | Illite - $(\text{K}, \text{Na}, \text{Ca})_2 0.3.33(\text{Mg}, \text{Mn}) 0.4.3$ $(\text{Al}, \text{Fe}, \text{Ti})_2 \text{O}_3 \cdot 16(\text{Si}, \text{Al}) \text{O}_2 \cdot 4\text{H}_2\text{O}$ |
| | Chlorite - $(\text{Mg} 0.4 \text{Fe} 4.2 \text{Al} 1.5)(\text{Si} 2.6 \text{Al} 1.4)$ $\text{O}_{10.2}(\text{OH})_{7.8}$ |

This information confirmed my ideas about this slip. Originally, I thought the clay to be high in calcium and magnesium, which seems to be true. From this information one can also assume that the empirical formula would be quite complicated. It was also evident that the combination of R. O. members would yield a strong and reliable glaze. I used this glaze quite extensively and found it to be very consistent. It was also easy to see that this clay would form glaze at cone 5. The formula that I use for this glaze is as follows: Ionia clay - 100 per cent.

West Bloomfield Slip:

This clay was also located along the roadside where the road cut through a hillside. It was located about 2 miles from Routes 5-20 at West Bloomfield, along County Road No. 37. There seemed to be quite a few beds of clay along this road. It was quite easy to see and ~~are~~ large and relatively clean. I also note that if the clay is found shortly after a rain it will be washed into the ditch and almost pure.

In the initial test series the clay showed good color possibilities. Therefore, I decided to work on color possibilities with this clay.

An interesting note about this clay is that the X-ray analysis showed the West Bloomfield and Ionia clays to be almost identical. The quartz percentage was the same. Also, the amounts of the other materials--dolomite, calcium carbonate, illite and chlorite--were similar. This would lead one to believe that the

initial tests would be quite similar. There was a point in the first series with the basic fluxes that the West Bloomfield clay did yield a glaze that was almost identical to the Ionia glaze. This was with gerstley borate added to the clay at 20 per cent and flint at 20 per cent. The conclusion that I reached on this point was that the additional CaO helped to bleach the color and bring the R. O. closer to that of the Ionia clay. The two locations are approximately 5 to 8 miles apart.

This clay formed satisfactory glazes with the basic fluxes at the cone 5-6 range. Of this basic series more work was done with three of the bases. The first base was with 20 per cent of gerstley borate. The glaze that resulted from this combination yielded a smooth satin finish semi-gloss glaze. The color was a dark green-brown. This clay seemed to have a higher iron content than the Ionia clay. The glaze would then consist of the clay and additional calcium and glass former B_2O_3 . The second base consisted of 40 per cent petalite and 10 per cent silica. The glaze was a good mat texture and of a yellow color. The yellow was unexpected since slip glazes are usually thought to be brown or black. This glaze consists of the clay and lithium supplied by the petalite which also lends potash and soda to the R. O. and the additional 10 per cent of SiO_2 . This glaze has the highest percentage of additions of any of my slip glazes. The third base that was used extensively was with 5 per cent of bone ash (calcium phosphate) $Ca_3(PO_4)_2$ and 5 per cent of SiO_2 which improved the surface quality of the glaze. This is my red glaze, a pleasant mat-to-gloss glaze depending on the amount of reduction.

The color tests were conducted with the first two bases. The colorants used were cobalt oxide, copper oxide, red iron oxide, and rutile. The colorants were added to the base from 0.25 per cent up to 3 per cent each. The cobalt series was very similar in both bases. Both ended up with a black glaze, one gloss and one mat. The copper series yielded very little color, being browns in all the tests. The iron gave a series of browns and the rutile a series of tans. All were good colors, but seemed closely related and not surprising in any case. The rutile series was tried with opax as an opacifier. The opax did opacify the glaze slightly. The opax was used up to 4 per cent.

The bone ash glaze was tested from 1 to 15 per cent, but the best color was at 5 per cent. Another series to develop reds was tried with amblygonite ($.9 \text{ Li}_2\text{O} \cdot .010 \text{ K}_2\text{O} \cdot .083 \text{ Na}_2\text{O} \cdot .010 \text{ CaO} \cdot .003 \text{ Fe}_2\text{O}_3 \cdot 1.007 \text{ Al}_2\text{O}_3 \cdot 1.051 \text{ B}_2\text{O}_3 \cdot .062 \text{ SiO}_2 \cdot .223 \text{ F}_2$). The colors produced by the amblygonite test series were, at one point, very similar to the bone ash series. The series also gave some very interesting red-browns.

The West Bloomfield clay seems to be an excellent base for experimentation and has given a great variety of colors and textures. The glazes had a firing range from cone 5 to cone 9, although most of my glazes were developed to melt at cone 5 or cone 6. The formulas for the glazes which I have described are as follows:

West Bloomfield glazes:

| | |
|-----------------|----|
| C3 | |
| Clay | 25 |
| Gerstley borate | 5 |

| | |
|-------------|-------------|
| C4 | |
| Clay | 25 |
| Petalite | 10 |
| Silica | 2.5 |
| A7 | |
| Clay | 25 |
| Bone ash | 1.25 |
| Silica | 1.25 |
| Z1 | |
| Clay | 25 |
| Amblygonite | 0.75 to 3.0 |
| Silica | 1.25 |

Lake Erie Clay:

This location is about 15 miles west of Erie, Pennsylvania, near West Springfield, Pennsylvania, along the shore of Lake Erie. This deposit is a high bank and is gray in the raw state. The clay was full of small rocks and a sand-like material.

The X-ray analysis of the Erie clay seems to place it in the glacial lake category of clays. This would have been my estimation, even without the analysis. This clay and the Coldton, New York, clay are also almost identical. The Lake Erie clay contains about 53 per cent quartz and 47 per cent other materials. The other materials are, in order of amounts present, quartz and the clay portion, illite, chlorite, and calcium aluminum hydroxide silicate. Chemically, the clay looks like this:

| 53 Per Cent | 47 Per Cent |
|-------------------------|--|
| Quartz - SiO_2 | Illite - $(\text{K}, \text{Na}, \text{Ca})_2 0.3.33(\text{Mg}, \text{Mn}) 0.4.3(\text{Al}, \text{Fe}, \text{Ti})_2$ $\text{O}_3 \cdot 16(\text{Si}, \text{Al}) \text{O}_2 \cdot 4\text{H}_2\text{O}$ |
| | Chlorite - $(\text{MgO} \cdot \frac{4}{4} \text{Fe} \frac{4.2}{4.2} \text{Al} \frac{1.5}{1.5}) (\text{Si} \frac{2.6}{2.6} \text{Al} \frac{1.4}{1.4}) \text{O} \frac{10.2}{10.2} (\text{OH}) \frac{7.8}{7.8}$ |
| | Calcium Aluminum Hydroxide Silicate - $\text{Ca}_2\text{Al}_3\text{Si}_3\text{O}_{12}$ (OH) |

From this information and my first tests of the clay alone, it was obvious that this clay was more refractory than the first two clays. In the first test, the clay fired to a pasty rough dark brown. The test series with the basic fluxes showed very little to be excited about. The test series was extended and silica was added at 5, 10 and 15 per cent. Professor Cowles and I decided after the first series that the clay lacked R. O. and SiO_2 . This is hard to explain, since the analysis now shows that the clay is 53 per cent quartz. Another test was set up with a mixture of 45 per cent petalite and 55 per cent nepheline syenite. The mixture was used at 10, 20, 30 and 40 per cent. Through these two test series, the clay began to form more satisfactory glazes. Still, I didn't have a glaze that I wanted to use on my pots in any quantity. Most all of the glazes to this point were typical slip glazes of the brown type. Finally, in a discussion with Professor Cowles, I decided to add gerstley borate to a test with whiting at 15 per cent and silica at 5 per cent. The additions were of 5, 10 and 15 per cent. This test did yield a good, very usable glaze. The additional CaO and B_2O_3 added enough to the R. O. and glass former to dissolve the iron and form a better glass.

Another glaze was tested with a combination of fluxes. This test series was with dolomite, bone ash and silica. The dolomite was used at 15 per cent, silica at 5 per cent, and the bone ash at 5, 10 and 15 per cent. All of these tests worked well and gave a glaze of a green color.

Through the experimentation with this glaze it became apparent that Professor Cowles's original guess was accurate. The

clay did require additional R. O. and silica to form a melt. The other thing that seems very simple is that Ca proves to be the major high fire flux and almost always induces a glaze in combination with slip in some proportion. Also, by using whiting (CaO) in the slip glazes, the color tended to be toward the greens. The fact that this clay, having such a high percentage of quartz, still needed additional silica may be explained by the theory that the quartz structure was very coarse and the fine silica helped the melt to start earlier and form a more uniform glaze.

The formulae for the Erie clay glazes are as follows:

Lake Erie Glaze No. 1:

| | |
|----------|--------------|
| Clay | 25 |
| Dolomite | 3.75 |
| Bone ash | 1.25 to 3.75 |
| Silica | 1.25 |

Lake Erie Glaze No. 2:

| | |
|-----------------|--------------|
| Clay | 25 |
| Whiting | 3.75 |
| Gerstley borate | 1.25 to 3.75 |
| Silica | 1.25 |

Coldton, New York, Clay:

This clay was brought to me by a friend from his cottage. This is located about 80 miles west of Rochester, south of Buffalo. This clay was very similar in color, texture and raw state to the Lake Erie. The clay analysis showed the approximate values and graphs to be almost identical to the Erie clay. The clay contained

approximately 53 per cent quartz and 47 per cent other materials. These were illite, chlorite and calcium aluminum hydroxide silicate. My original tests suggested a more refractory material, so I decided to use this clay at cone 9 and try to get it to work without the amount of flux that I used in the Erie clay.

The first test series with the basic fluxes did not prove satisfactory. The next test was suggested by Professor Cowles to yield 1/10 of a molecule of each of the fluxes. The series was set up with 25 grams of clay, 12 grams of silica, and 1/10 of the relative molecular weights of the fluxes. This would give a known formula of $0.1 R. 0.1 Al_2O_3 \cdot 4 SiO_2$. The fluxes used were:

| | |
|--|-----------|
| 1. Lithium carbonate (Li_2CO_3) | 7.4 grams |
| 2. Soda ash (Na_2CO_3) | 10.6 " |
| 3. Pearl ash (K_2CO_3) | 13.8 " |
| 4. Whiting ($CaCO_3$) | 10.0 " |
| 5. Barium carbonate (Ba_2CO_3) | 19.7 " |
| 6. Magnesium carbonate ($MgCO_3$) | 8.4 " |
| 7. White lead ($2PbCO_3 \cdot Pb(OH)_2$) | 25.8 " |
| 8. Strontium carbonate ($SrCO_3$) | 14.8 " |
| 9. Zinc oxide (ZnO) | 8.1 " |

The purpose was also to see how the various fluxes affected the clay. The tests showed definite possibilities of areas to be carried further and those fluxes that could be dropped.

This series was followed up by the same series with silica at 0 and then increased to 6, 12 and 18 gram increments. This was to see the effect of the silica on the clay. This proved to be an efficient method to test this clay. It gives an indication of what the various fluxes will do, as well as the effect of SiO_2 on the glaze. Through the tests, the calcium, barium, and strontium gave

similar results with the calcium the best. These seem to suggest good celadon possibilities. The lithium series dissolved the iron in the clay very well, but in all cases created shivering. The zinc series gave very interesting color effects. It gave a mottled brown and yellow glaze.

Tests were set up on the basis of the results of the preceding tests. The whiting, barium carbonate, zinc and lithium carbonate series were carried further. Whiting was tried at 8 and 12 parts. Both gave a good glaze of a green-gray color. The tests with 12 parts of whiting were slightly fluid at cone 9, but did stay on the pot. The barium carbonate was used at 15 and 25 grams and both gave a celadon-like, green semi-transparent glaze with the 25 part test only slightly fluid. This glaze should give a good celadon over white stoneware or porcelain. The lithium carbonate series was tried with less only to combat the shiver, but even the lowest amount of 4 grams still shivered. A suggestion by Professor Cowles was that I try spodumene instead of lithium carbonate to introduce a lesser amount of lithium. At this point I have not done this. I do hope to run a series in the near future because of the color possibilities with the lithium. The most interesting glaze developed with this slip was the glaze with zinc as the flux. This glaze was yellow when applied medium thickness, and brown with yellow specks when thinner. I offer the formulae for the three very usable, reliable glazes developed from this slip at cone 9.

Coldton Glaze No. 1:

| | |
|---------|-----|
| Clay | 25 |
| Whiting | 10 |
| Silica | 2.5 |

Coldton Glaze No. 2:

| | |
|------------------|----|
| Clay | 25 |
| Barium carbonate | 25 |

Coldton Glaze No. 3:

| | |
|------|----|
| Clay | 25 |
| Zinc | 10 |

Honeoye Clay:

This clay was also brought to me by a friend from a farm south of Honeoye, New York. It was unfortunate that I could not obtain an X-ray analysis of this last clay. It does not seem to fit into either pair, although its location is not far from the West Bloomfield site.

The test with the clay alone showed the clay to be more refractory than the Ionia or West Bloomfield clays. It seemed closely related to the Erie and Coldton clays. The series with the basic fluxes yielded little in the way of usable glazes. The series was extended to 20, 30 and 40 per cent of whiting, dolomite, talc, gerstley borate, and 5, 10 and 15 per cent of bone ash. Petalite was dropped from the testing due to shivering problems. This series presented some very interesting glazes with most fluxes. The same series was completed with additions of 5, 10 and 20 per cent of

silica. This was done again to see the effect of the additional SiO_2 on the glazes. The whiting series with 20 per cent gave a brown-green glaze with a mat texture. With 30 per cent the color changed considerably to a yellow-green which began to break into some glossy spots. With 40 per cent whiting, the color bleached slightly again. The silica additions made the glaze increasingly glossier, but the fluidity has not been affected. All six tests are very usable glazes. The dolomite tests with 20 per cent again gave a brown, darker than the whiting test. The color lightened with the additions from a yellow-brown to a lighter yellow-brown. The SiO_2 additions had only a slight effect on the glaze, being brighter with the 20 per cent addition. These were very satisfactory glazes, presenting very interesting color and texture.

The talc series showed very little color change throughout. The test with 40 per cent was only slightly lighter than the 20 per cent test. All three were a mat surface. The three additions of silica had less effect on the glaze than in previous tests. The magnesium seemed to have less fluxing ability than the (CaO) whiting or the dolomite $(\text{CaCO}_3\text{MgCO}_3)$. It had less power to dissolve and hold the iron in solution than the CaO and (CaCO_3) combinations. The tests with gerstley borate and bone ash gave glazes that were all browns. The bone ash series tended to be of the red-browns. The silica additions took the glaze back to the darker browns. The flint additions in the gerstley borate series also darkened the glaze. The final test with silica at 20 per cent induced mottled black areas.

I spent far less time working on this slip and still have about four very usable glazes with variations. This clay seems to fit between the two pairs of clays previously mentioned. The possible composition of this clay may include higher amounts of quartz than the Ionia or West Bloomfield clays. The remaining materials such as calcium carbonate seem to be very close in content, considering similar results. This clay does seem to be higher in iron, however.

The glaze formulae used with Honeoye clay are as follows:

Honeoye Glaze No. 1 (yellow-green):

| | |
|---------|-----|
| Clay | 25 |
| Whiting | 7.5 |

Honeoye Glaze No. 2:

| | |
|----------|-------------|
| Clay | 25 |
| Dolomite | 7.5 to 10.0 |

Honeoye Glaze No. 3:

| | |
|----------|----|
| Clay | 25 |
| Bone ash | 10 |

CHAPTER 2

Serving Pieces

My choice of serving pieces as part of my thesis topic seemed very appropriate to my particular feeling for the material. Taken literally, a serving piece is something which is used to serve. This definition gave me the proper balance between freedom and restriction under which to work. I could create pieces for a number of purposes using any technique. I chose to work in two different directions with one goal in mind, personal serving pieces. One direction included all phases of wheel-thrown work. I worked on pieces for special food service which I personally thought important, such as a covered plate for serving pancakes, and an individual covered low bowl for hot stews or soups. These were not earthshaking, creative ideas; but they were solid problems of functional pottery and problems that I could work on using the wheel in a very direct, straightforward manner. At the other extreme, I worked on pieces such as platters, done with slab techniques. These pieces were made with no special function in mind. I thought of them as pieces to be enjoyed for their individuality, whether they were being used to serve celery, steak, or even to hold peanuts. I made things which I felt would be enjoyable to use, look at, and touch. I almost always try to inject a sense of humor into these pieces. I feel that serving pieces make the meal more enjoyable, and more enjoyable meals make more enjoyable people. This all fits into my philosophy of enjoying daily life and the simple things, such as meals.

I have divided this chapter of my thesis into two sections, headed "Wheel-Thrown Forms" and "Slab-Built Pieces." Each of these sections is further subdivided for convenience.

Section 1. Wheel-Thrown Forms

Platters and Plates:

My initial exploration of wheel-thrown forms began with platters and plates. This proved to be an excellent starting point. I approached the problem enthusiastically, thinking that my throwing was my major problem. When drying cracks began to appear I thought it nothing more than my inexperience at throwing these shapes or a too-rapid drying cycle.

In discussing the problem with Professor Cowles, he pointed out a number of special problems that even the best potters might encounter. The standard S. A. C. stoneware, an excellent general throwing body, is very plastic, which results in a good deal of shrinkage. This shrinkage in plate forms, if uneven, could mean cracking. He also pointed out that I might try a new throwing method. At the time, my technique was to center and open in the normal way and then stretch it over the bat to the desired size. With the plastic S. A. C. stoneware this worked fine for the throwing but put stress into the clay which, in turn, would show up in the drying stages. Professor Cowles's first suggestion was to try throwing a flattened lump; this would eliminate the initial stretching. His

second suggestion was that for larger platters I try a slab sealed to the bat and then throw a rim onto it. Both of these suggestions proved to help my throwing considerably. Personally, I chose to use the first method. The second method also worked well, but I still did not seem satisfied with it. To insure my success, I decided to develop the clay body by slightly decreasing the plasticity and opening the body for drying purposes.

After listening to many theories and taking suggestions from friends, I did some testing and arrived at the following adjusted S. A. C. stoneware body. The original recipe looks like this:

| | |
|----------------------------|----------|
| Kentucky special ball clay | 100 |
| XX Sagger clay | 100 |
| Cedar Heights red art clay | 50 |
| North American fire clay | 25 |
| Bentonite | 3 |
| Red iron oxide | 1-5% |
| Grog | Optional |

The adjusted recipe worked out as follows. For the Kentucky special ball clay I substituted Tennessee No. 5 ball clay, which is a less plastic ball clay. I substituted A. P. Green fire clay at 50 parts for the North American fire clay at 25 parts. The final adjustment was to use only half the bentonite in the original recipe. The adjusted body reads as follows:

| | |
|----------------------------|-----|
| Tennessee No. 5 ball clay | 100 |
| XX Sagger clay | 100 |
| A. P. green fire clay | 50 |
| Cedar Heights red art clay | 50 |
| Bentonite | 1.5 |
| Grog | 15 |

The resultant clay body has been used on both the wheel-thrown pieces and the hand-built pieces. It has proven to have solved the drying problems. Since I began using this body, I have not taken any precautions during the drying cycle and have had no cracking problems.

The throwing method that I arrived at began with a flattened lump of clay which was centered with a minimum of water. The lump was opened with the heel of the right hand, giving a much wider opening and cut down greatly on the stretching that was necessary. The final step of the throwing was when a flat wooden rib was used to clean the surface of the piece. This was accomplished by starting at the rim and moving in toward the center, thus compressing the clay at the same time. With this method and clay body I have been able to throw platters up to 30 inches in diameter.

Having solved my problems of production, I became involved with the aesthetic problems of decoration. The roundness of these wheel-thrown pieces suggested simplicity of activity and color. The first series of platters was glazed with a white cone 5 glaze. They were brush-decorated with an action painting technique using black, red, blue, and yellow slips over the glaze. This yielded some very direct and satisfactory results. I enjoyed very much decorating with this method. I wanted to seek a still more spontaneous decorating technique. I then made a series of about a dozen plates and decorated them while I made them. I used a slip trailer and the colored slips. This method seemed to grow into the round forms and be much less applied. Still another series was made in which I

worked directly on the wet piece with my fingers, a fork, pieces of wood, and slips. The resultant pieces were my best plates. It seemed as though I had finally been able to pull all the techniques together to work with the clay. It was a very good progression of possibilities which grew quite naturally, one from the other. I now believe in this as a method of beginning a series. I decided to start each series as simply as possible, letting the results set up the progression.

I consider the series of plates and platters to have been very valuable to me for the lessons of making and decorating this wheel-thrown form. I feel as though I have reached a level of proficiency with this form.

Covered Plates:

The covered plate was made with the same techniques that have been described earlier. The plate form and the cover, which was basically a bowl shape, were combined into a unit. The covered plate does represent some special uses and also some special problems. The first change was that the rim of the plate was slightly altered and made smaller. A groove was also put into the plate during the throwing, so as to have a more secure fit for the lid.

The first series was glaze-fired with the covers on. This necessitates leaving the rim of the cover unglazed, as well as the groove in the plate. This created an unpleasant sound when the lids were turned. The unglazed groove in the plate was also unpleasant

visually. To solve this problem I tried two solutions. First, the plate was glazed completely, except for the foot. The cover was glazed, except for the very rim. The covers were placed on a layer of sand in the kiln so they would be able to contract evenly during the firing. This method worked very well but some lids still warped slightly. The next series was fired in a similar manner, but the lids were placed on round fire clay rollers. This method allowed the piece to fire without much distortion. This method was used by Professor Cowles on sculptural pieces and suited my purposes very well.

Possibly the most interesting thing about the covered plate was its great variety of functions. My ideas always began to develop from things I thought were in need of this type of piece. I started out with some pieces made for more common uses, such as a butter dish or a cheese plate. I began to think of things which we always seem to enjoy eating while hot and have a hard time keeping hot till served. Such things as a pancake or waffle plate are things that I have always felt necessary. The pancake plate was made with a higher lid to facilitate stacking. I also made several individual serving plates. One was made for an individual serving of stew or soup, with an extra-high rim. The other was an individual covered dinner plate. This plate might also be used to keep a dinner warm in the oven. I enjoyed these pieces very much. I pushed the idea until I reached the ultimate in covered plates, a covered muffin plate.

Again, I feel that this series was very valuable to me. I did design pieces for a variety of functions and adopted the idea in

different ways. During this series I also learned much technically which made it even more enjoyable.

Bowls:

The bowl form is one of the most functional, simple and beautiful serving pieces. The bowl is also one of the most enjoyable to make. The action of the wheel seems to give the rhythm of the flowing forms of the bowl. This form also dictates to me certain essentials to which I feel special emphasis should be placed. They are the rim, foot, and inside surface of the piece. A truly functional bowl should have a thickened rim for ease of handling, strength, and looks. I have also discovered that the thickened rim will aid against warping, especially in glaze firing. A strong foot is also essential for stability, handling, and as an aesthetic ending to the curved form. The inside surface should be clean to facilitate use and cleaning. Prior to my work here, I leaned heavily on the throwing marks as decoration.

During my first year, Professor Wildenhain gave a demonstration of throwing a bowl by using ribs as a means of finishing the form. I quickly adopted this old technique. It seems very logical now: the heavy throwing marks have a tendency to weaken the larger pieces. They also make use and cleaning more difficult. Using this technique the basic form was directly thrown, and then the ribs, a wooden rib inside and a flexible metal outside, were used to finish shaping the bowl. The form is finished from the top down. Instead of

stretching the form out, the clay is compressed and formed downward. This method also allowed a very finely-thrown form. The wooden ribs used on the inside were made of wood scraps, in a variety of sizes and curves. Very little decoration was done on the bowl form, other than variation of glaze thickness.

There seems to be an old saying which states that the bowl form speaks for itself and if it is not a good form then you decorate the surface. After my work, I must agree with this statement. In any case, I preferred not to work on the surface of the bowls.

Covered Bowls:

The idea of covered bowls is very much self-explanatory. My discussion will center around their function. This particular item is one which I think is very functional and practical to be made in clay. It is especially suited for serving of hot vegetables, soups and stews, all of which I am fond. Again, the idea is not a new one but I felt that I should experiment with the covered bowl form. The idea appealed to me also because I have not seen many potters working with it. Most potters work with a casserole. I find that the covered bowl seems to be more functional because of its shape. The form that I found to be most suitable was a high bowl with a domed lid. This seems to keep the contents warmer. An opening was left in the lid so the serving spoon might be left in the bowl when the lid was replaced. Several were made with a very

high foot attached. This was done to elevate the piece from the table and keep the hotter bowl off the table surface.

Section 2. Hand-Built Pieces

Platters:

My progression through the hand-built serving pieces does not always have a direct relationship to the wheel-thrown segment. I placed very few restrictions on my work in this segment, as to the function. I worked with the idea that the pieces might be used for many different purposes, for a platter could be used for more than one function, or in many cases even placed on the wall when not in use.

In my first series of slab pieces, I began as simple as possible. I worked with small slabs of clay with the idea of a platter in back of my mind. The series grew very rapidly, due to the simplicity with which I worked. I used few tools except my hands, a brush, and a fork. At first they were always flat with dome surface treatment. I would work coils, small slabs, or pulled handles added to the slabs. The clay was treated like a plastic painting. I often worked with a brush and slips or fingers and slips. This seemed a very spontaneous way of working and yielded some satisfactory results. These pieces more often than not warped in the glaze firing. This was not too disturbing due to the nature of the pieces. This was solved simply by adding strips of clay to

the bottom of the slabs. This strengthened and raised the piece, making it easier to handle.

Hand-Built Bowls:

The transition from slab platters to bowl forms was very natural and logical. Again, the series began as simple as possible, the first pieces being small platters with shallow depressions. The next step was to mold the slab in a biscuit bowl or plaster form and work from there. These growing forms also brought additional problems. I had to devise a foot to stabilize the bowl. This led to a progression of ideas for a slab-built bowl. First, I simply patted a flat bottom on the bowl. I then used wads of clay added to the bottom and finally resolved the problem by doing a constructed foot that was built right into the piece.

The decoration on this sort of construction came entirely from the forms and the texture of the clay. Many small slabs were added and modeled into the pieces. This work took me very close to sculpture. I became more and more involved with the forms that were growing and less concerned with the function. Although the function was limited, they still worked well as functional pieces. These pieces seemed to work especially well for fruit, vegetables or salads.

Covered Hand-Built Pieces:

At this point I began to experiment with the idea of slab forms with lids. The first few pieces with covers worked well as sculptural pieces in the unfired state. They did, however, warp in the glaze firing. This could not be avoided with the type of piece that I was now making. The bowls were quite irregular and had no real rim to accept a cover. The covers, however, were built to fit.

All my pots in this segment to this point were, to me, very free in form and decoration. With this series of covered pieces, I decided to begin working in a more controlled way. I began to make forms with more regular geometric structure. The forms were almost always round with straight sides or rectangular with straight sides, top, and bottom. Even though my work became more rigid, somehow the progression still seemed very natural. The forms still look related. They still had a growing quality that I wanted. I now find it very difficult to examine, explain, or evaluate my most recent work in this series. I was not designing my pieces around the function, but they seem to fit into a category of platter-like forms. Some of these pieces have sections that have lids, some are strictly flat pieces. Many of this series may be used in more than one way; laid flat one might be a platter, stood up on edge it may be a weed holder. A few pieces have lids that may be removed so that the piece might stand vertically.

The pieces became more structural and my ideas grew more simple. Most of my work, though, has a very organic or animated quality. This quality is one which I enjoyed working on. This

discussion will be fully understandable only when the illustrations are seen. From this point on, I will not try to describe each piece. However, I will mention the fact that the function is not often obvious. This brings back the memorable words of Professor Wildenhain: "So as it is you put mustard in it." It was at this point--when I had worked from simplicity back to simplicity--that I decided to stop.

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CONCLUSION

I find that to draw a concluding statement to my work this year is almost impossible. My only conclusion can be the facts. I have come through a very good progression of forms and problems. I have become more proficient at solving problems of both. I have experimented a great deal. After working on my wheel-throwing segment, I realize that I have gained much needed experience and proficiency with the wheel. My throwing and treatment of wheel-thrown forms has been developed to a point where I see the possibilities of the materials. I could not have done without this section.

The hand-building section was equally necessary. Often pieces were worked on in hand building which grew out of ideas I had while working on the wheel. The reverse is also true. One section complements the other.

I had an opportunity to develop my hand-building techniques as well as stretch my ideas. I put myself out on a limb, so to speak. I pushed some of my ideas to the extreme, some to the point where they seem almost not to fit into my title. I have learned much of form from my work, also. I have expanded my vocabulary of things possible with clay. At times I began to study various sculptors and their forms. This proved to inhibit my thoughts rather than to help them. I concluded that my things must truly be my own in thought and execution. I feel that my work grew through working and not by designing.

My glaze section with the local slip glazes is where I have made the most discovery, personally. I have gained a wealth of information about this type of glaze. I must definitely say that it is here that I have accomplished what I set out to do. I have found and developed a good number of simply compounded glazes, a variety of colors and textures, at an economical cost. I am pleased with the experience and information that I've gained. This series amounts to more than a group of tests to present with a thesis but gives me a direction to follow. I now have a place to begin my work as a potter. I feel I've gained the fundamental knowledge in both clay and glaze directions. I am now ready to begin.

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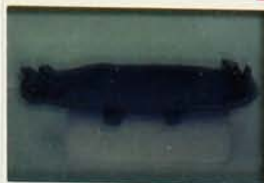
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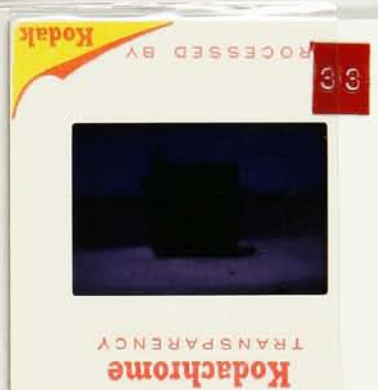
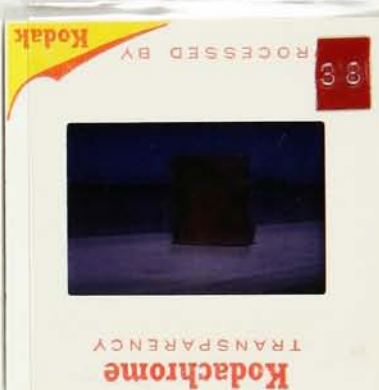


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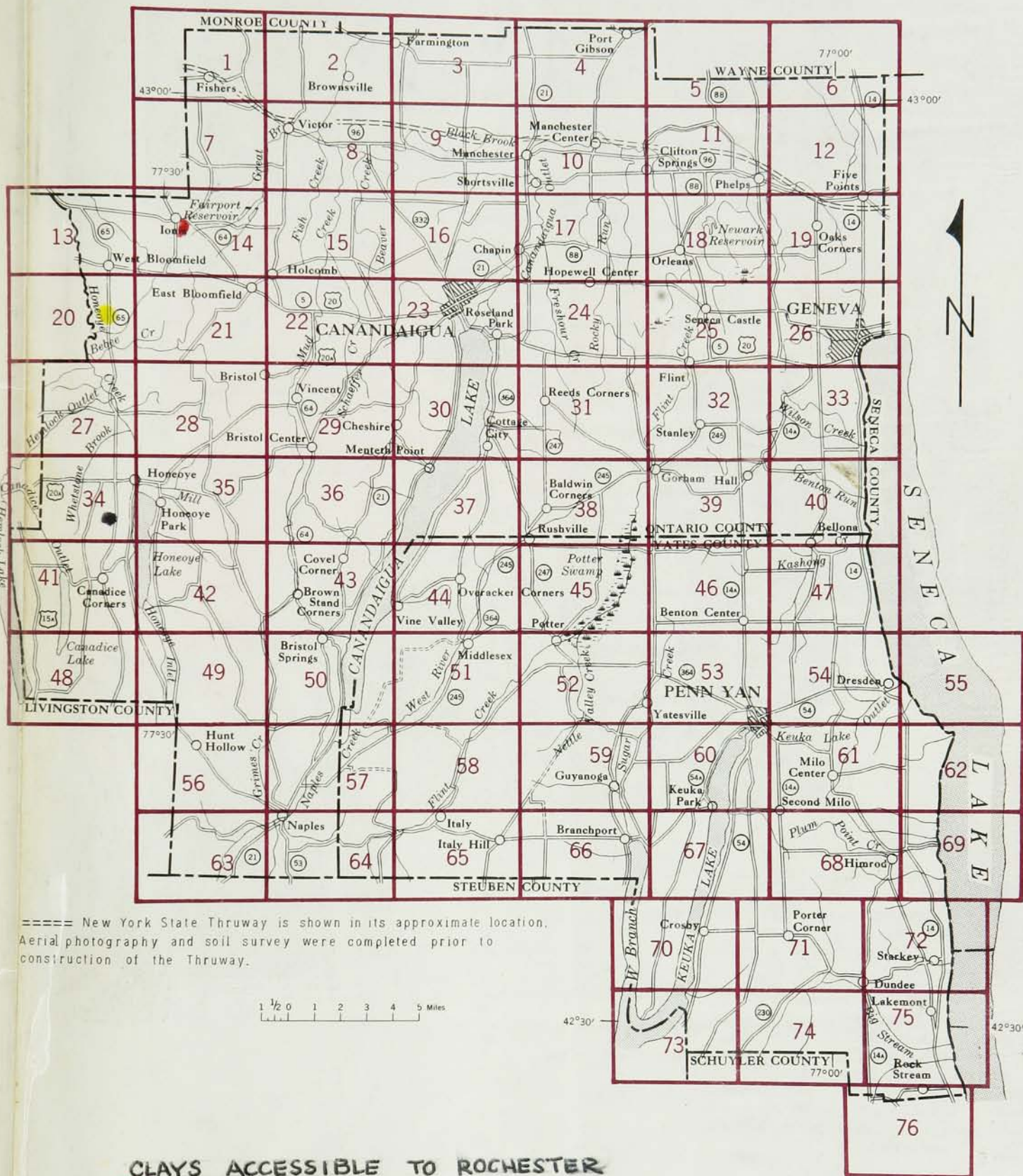
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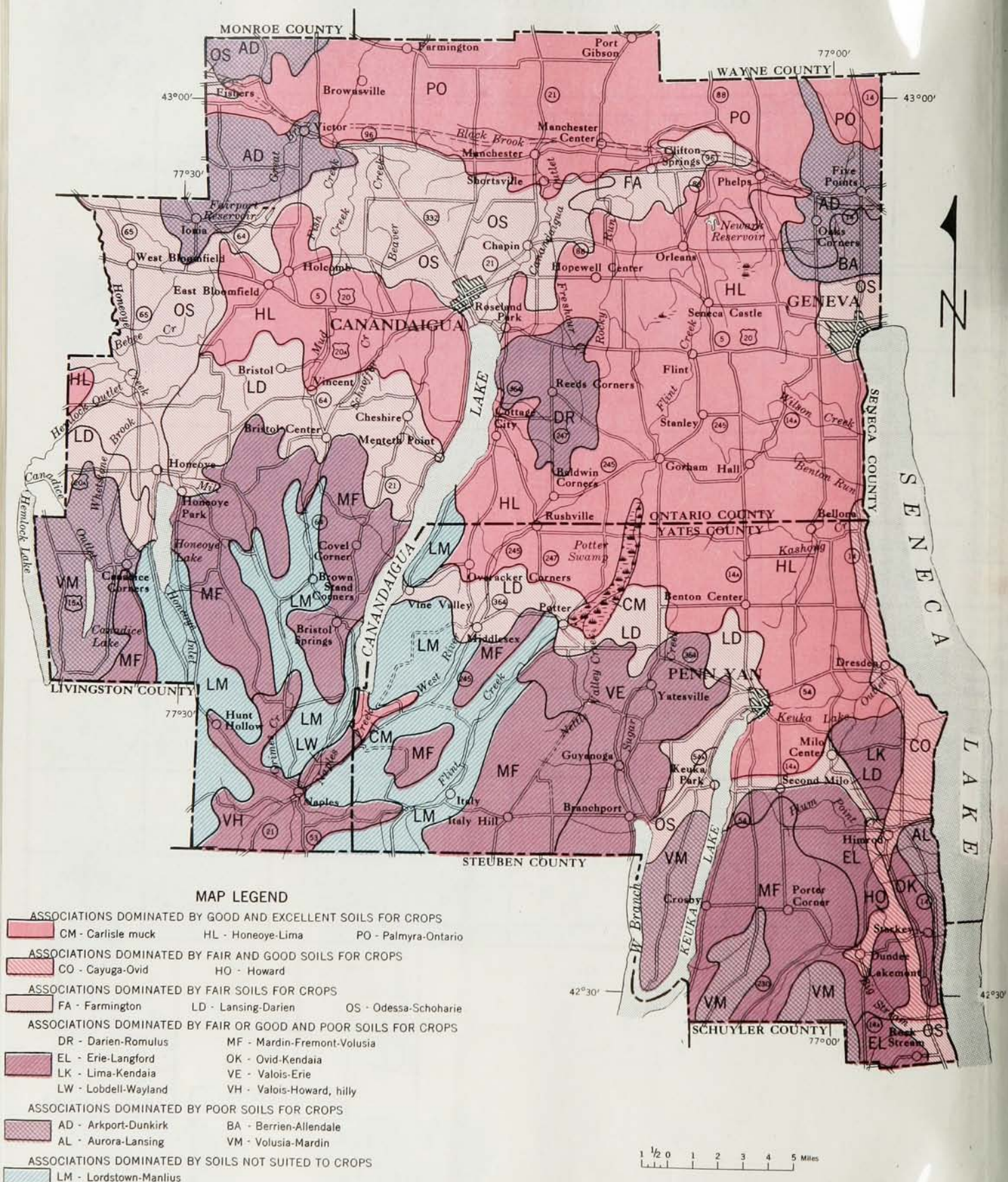
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ONTARIO-YATES COUNTIES, N. Y. INDEX TO MAP SHEETS



ONTARIO-YATES COUNTIES, N. Y. SOILS OF FARMING COMMUNITIES (SOIL ASSOCIATIONS)



Soil map constructed by Cartographic Division,
Soil Conservation Service, USDA,
from 1938 aerial photographs.
Controlled mosaic based on polyconic projection,
1927 North American datum.

Soils surveyed 1941-48 by W. Secor, in Charge,
J. K. Pasto, L. M. French, G. Gibbs, F. R. Gladwin, and R. W.
U. S. Department of Agriculture, and C. S. Pearson, M. E. Al
W. A. Williams, and L. Dushek, Cornell University Agriculture
Correlation by W. H. Lyford, Jr., U. S. Department of Agricul
M. G. Cline, Cornell University Agricultural Experiment Station

ment Station.

BUFFALO'S LEADING MOTEL
Exit 50 to Youngman Expressway to Colvin Ave.,
South to Sheridan Drive
20 Minutes to Niagara Falls or downtown Buffalo
Home of the famous Red Lobster Restaurant
150 Excellent Guest Units
See Listing **(249)** on Map

Kenton Manor Motel

BUFFALO'S LEADING MOTEL
Exit 50 to Youngman Expressway to Colvin Ave.,
South to Sheridan Drive
20 Minutes to Niagara Falls or downtown Buffalo
Home of the famous Red Lobster Restaurant
150 Excellent Guest Units
See Listing 249 on Map

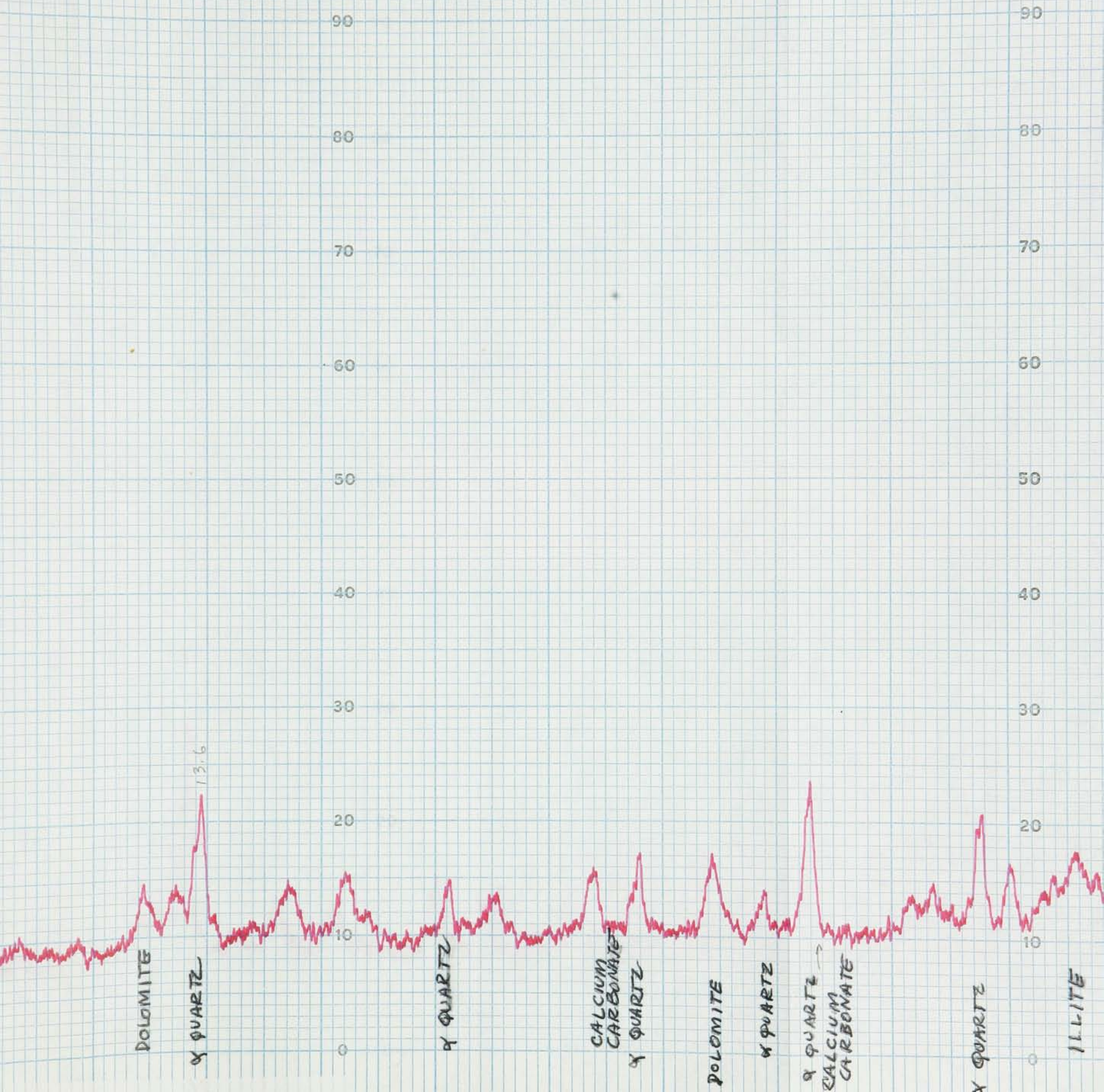
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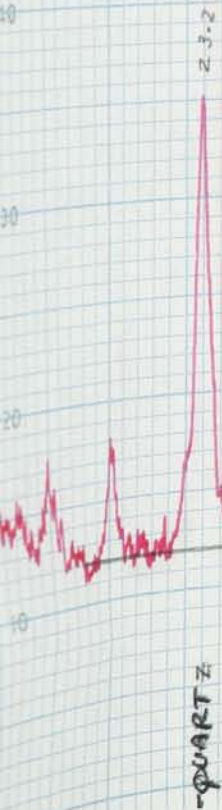




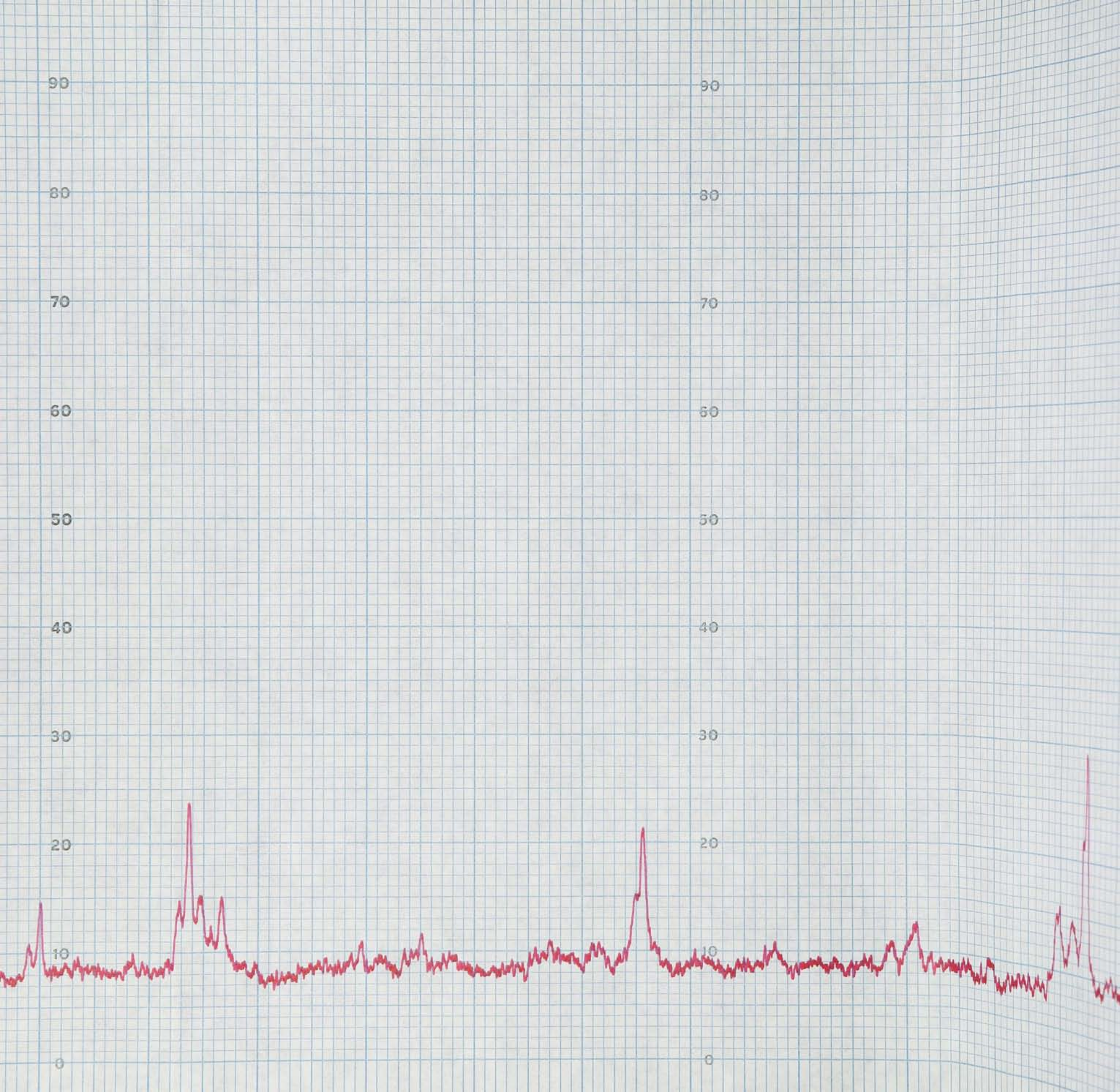


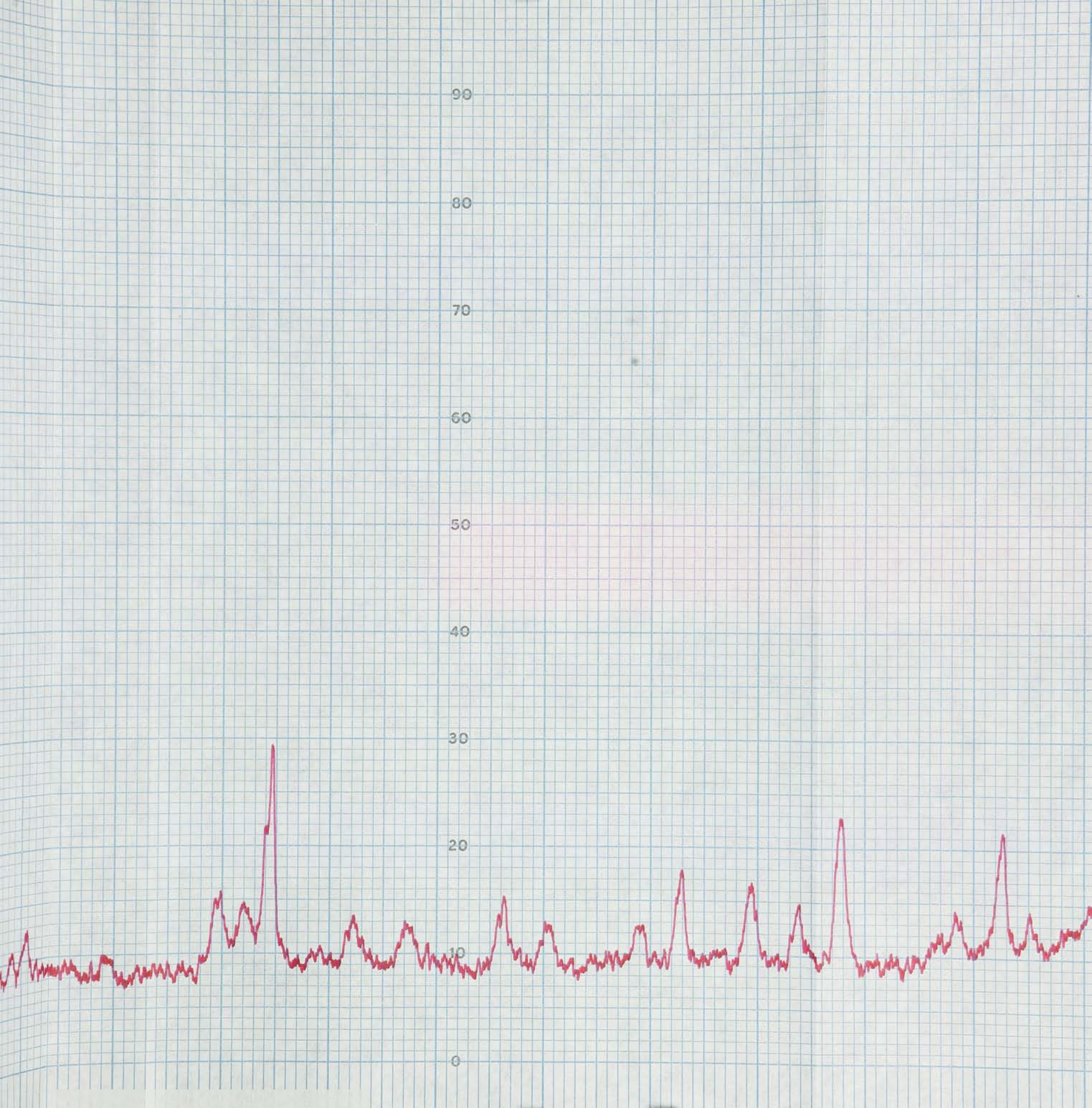
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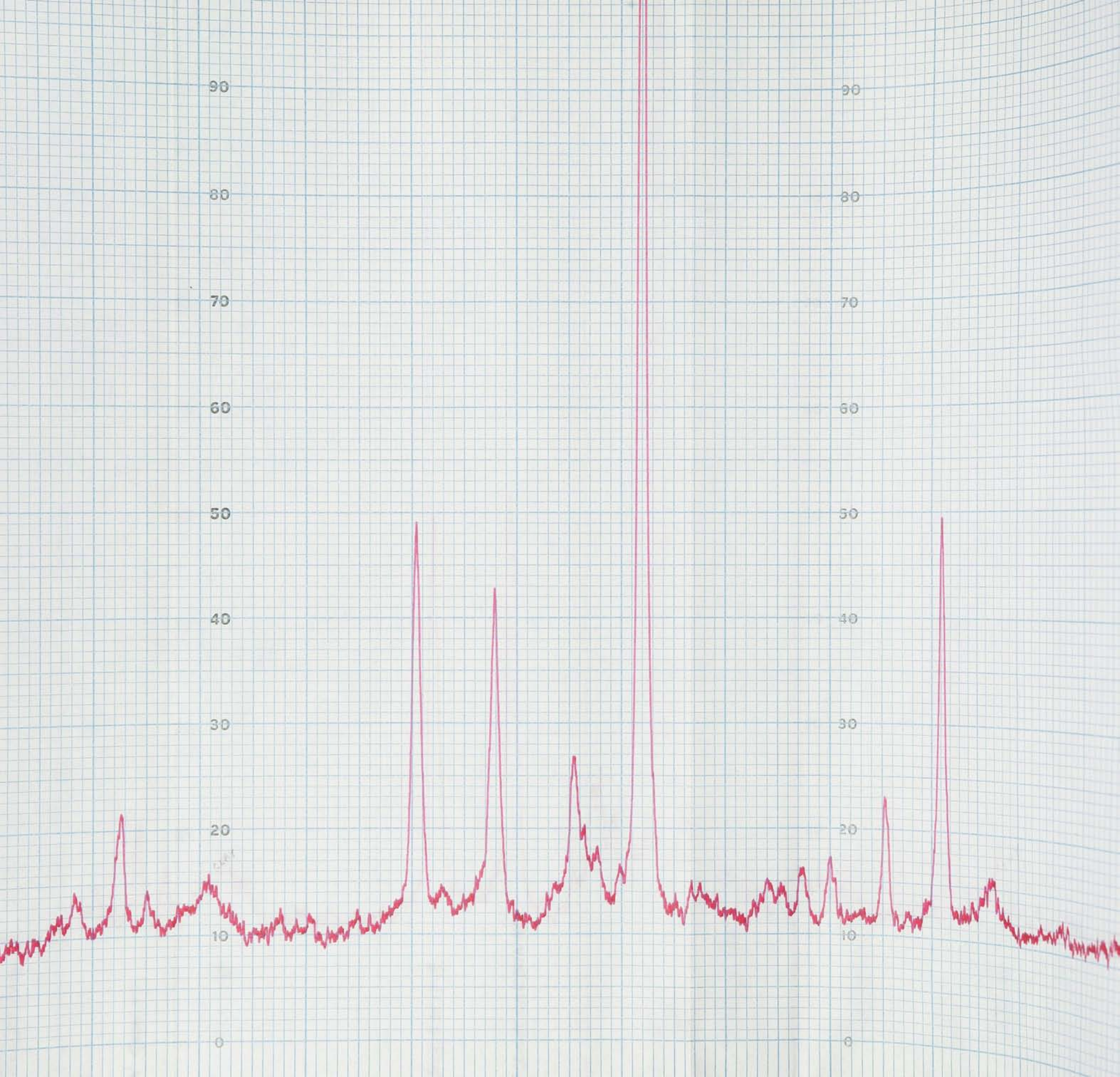
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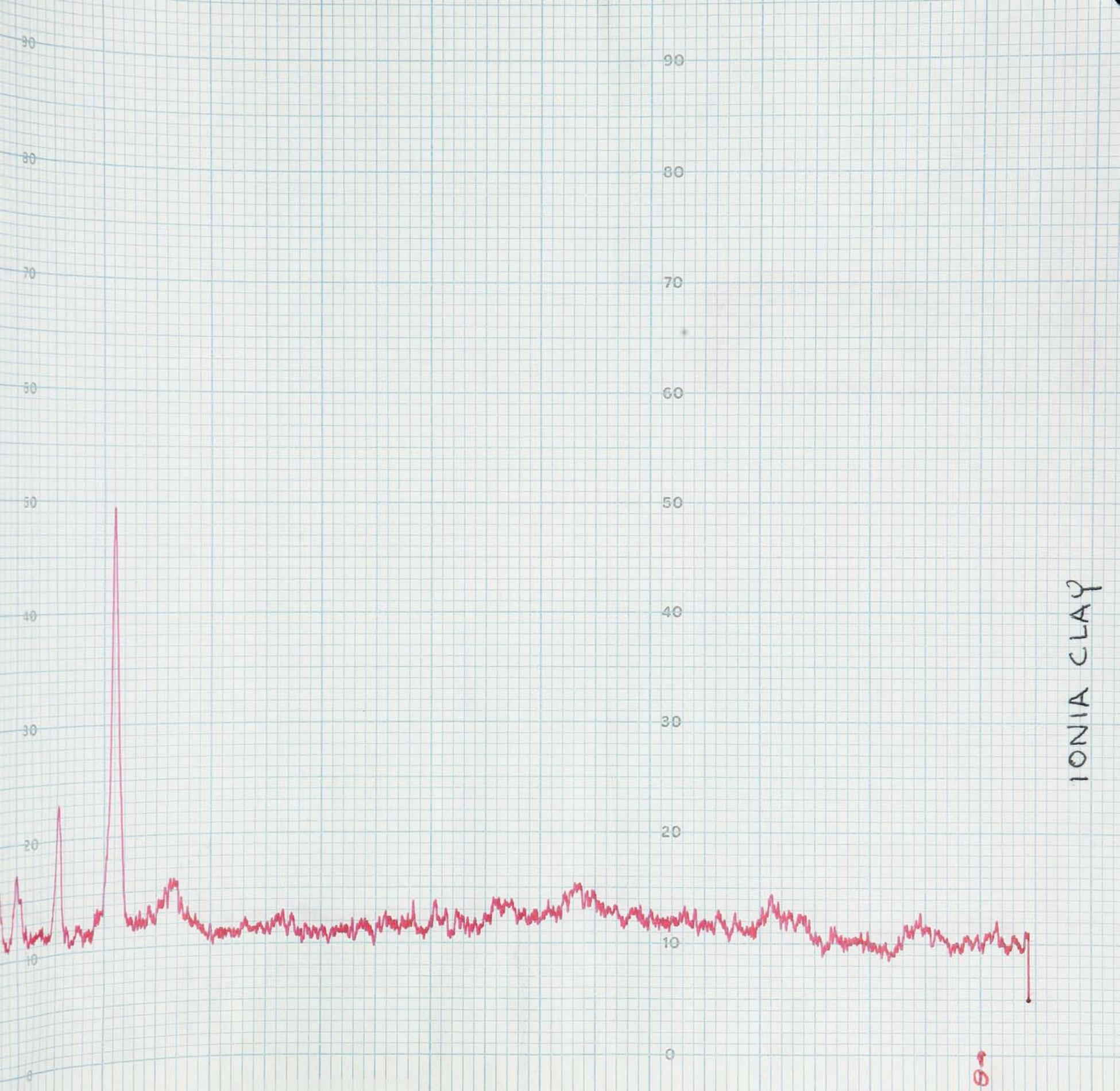


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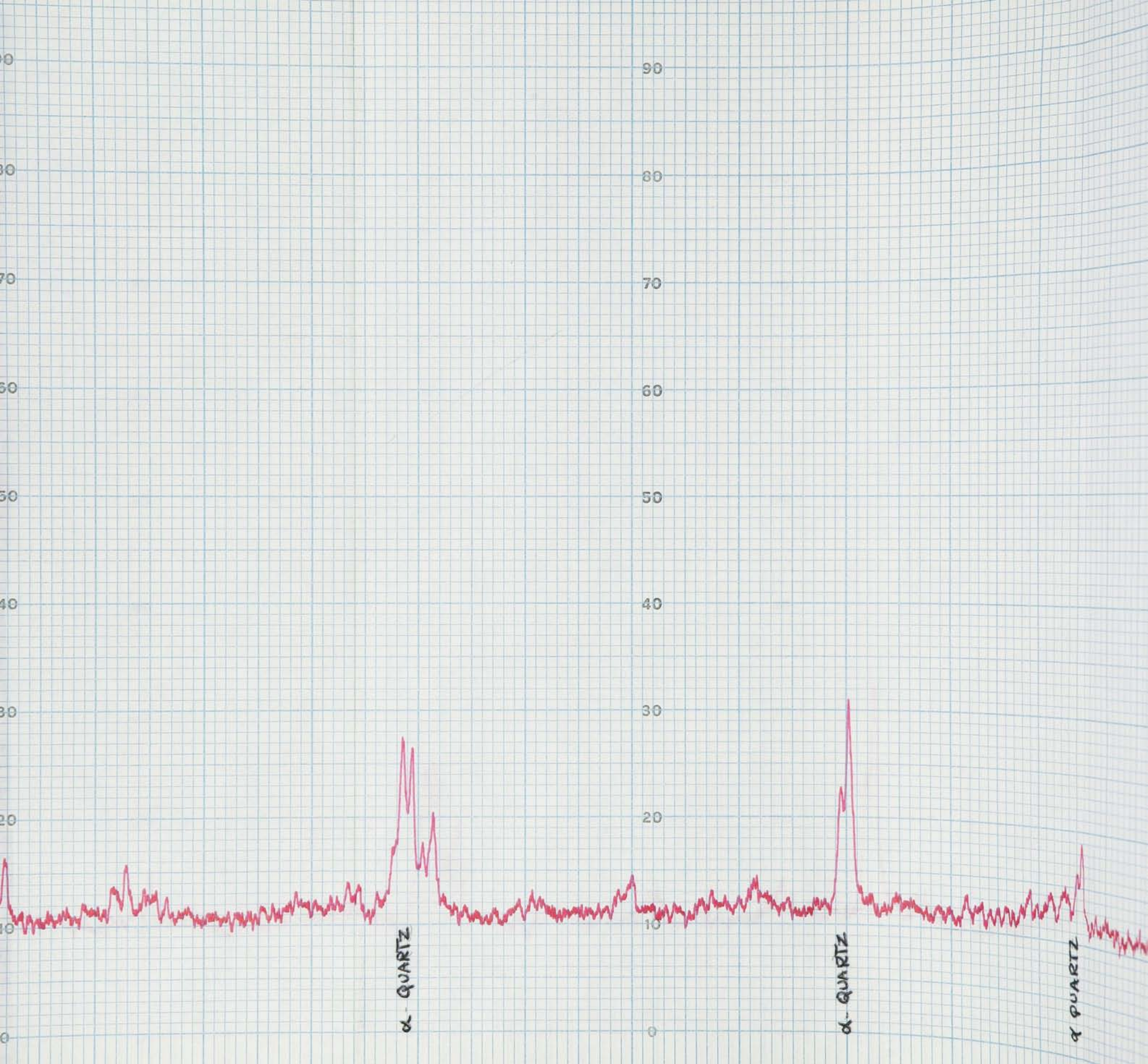


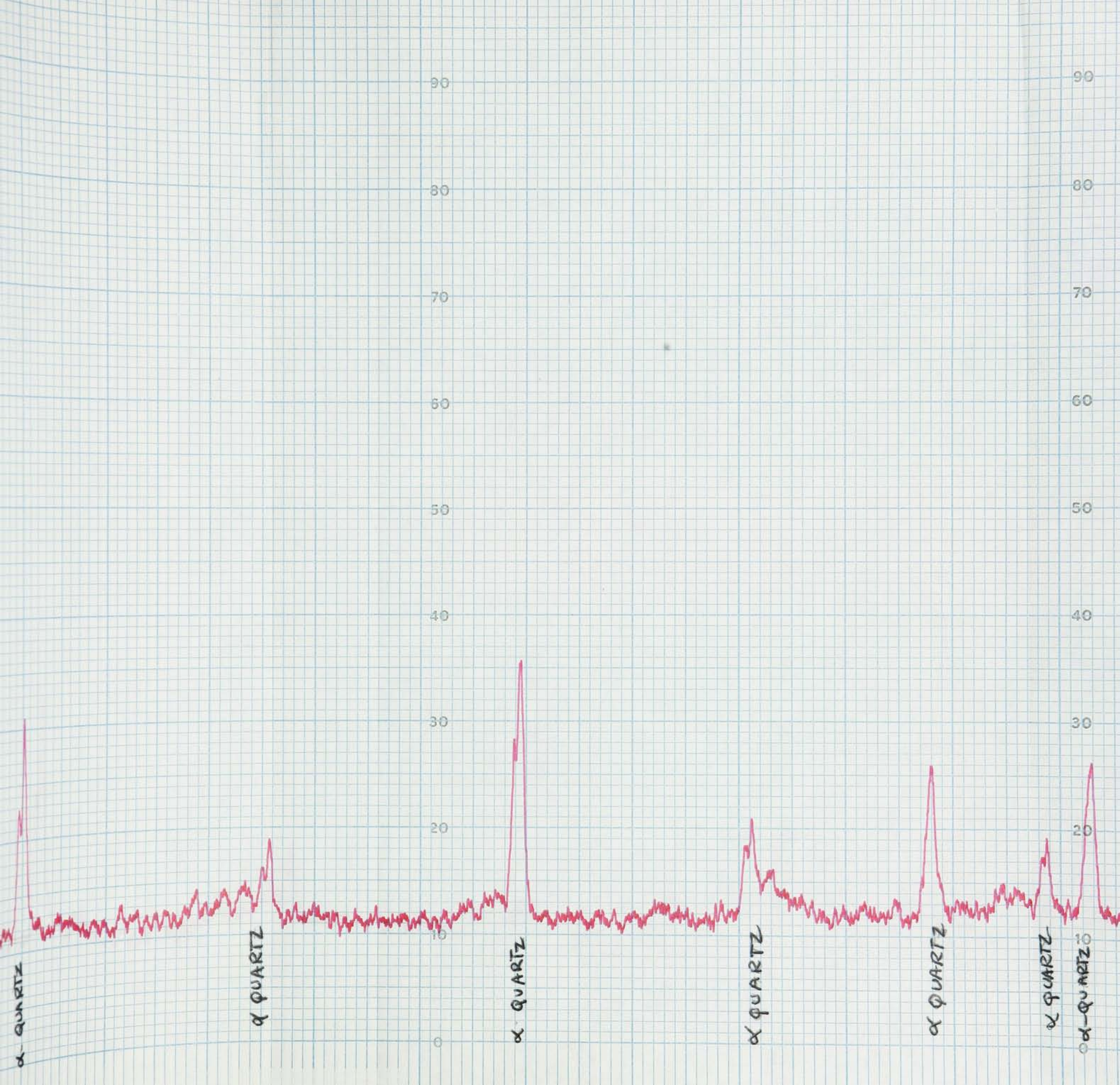


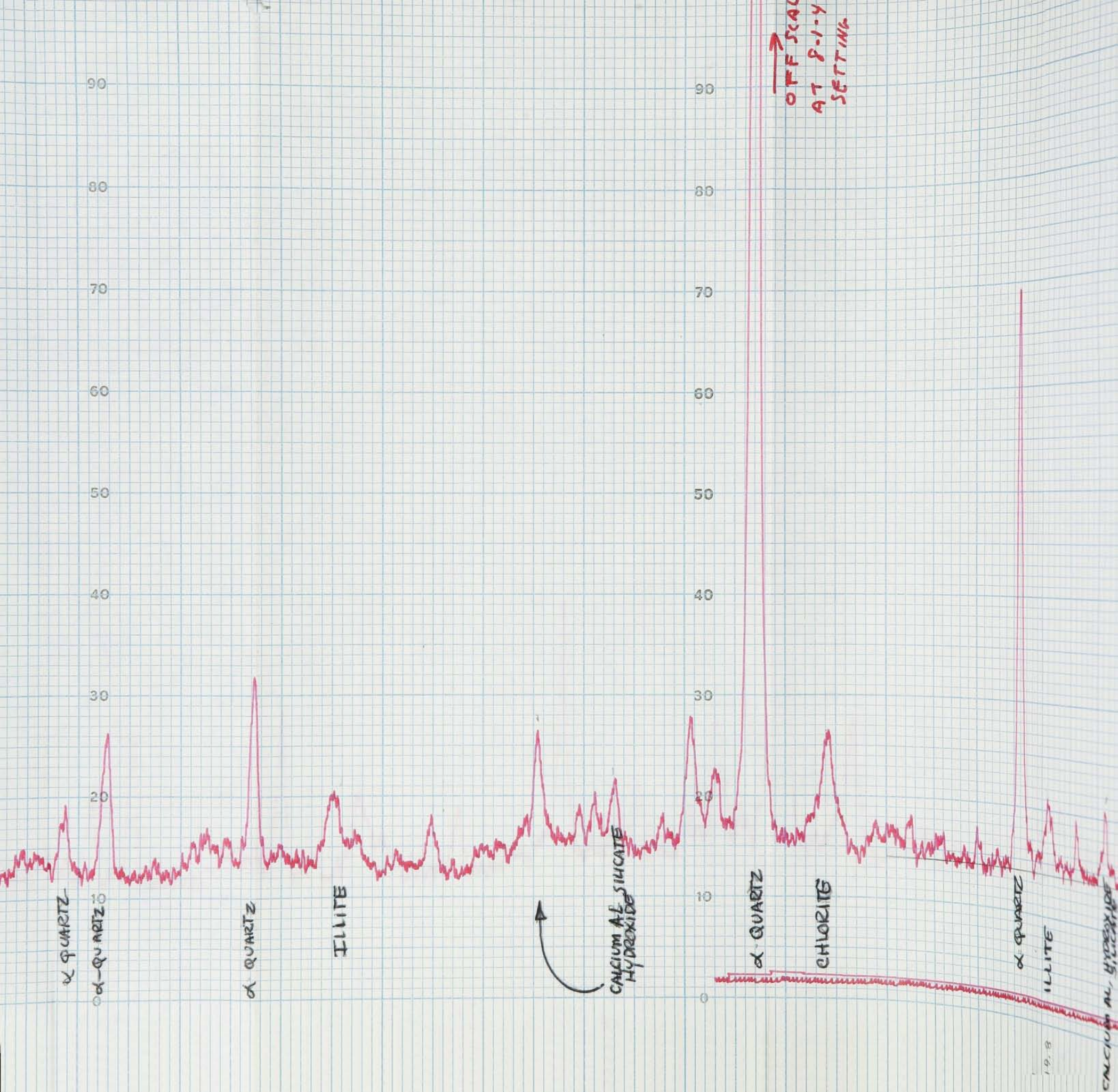


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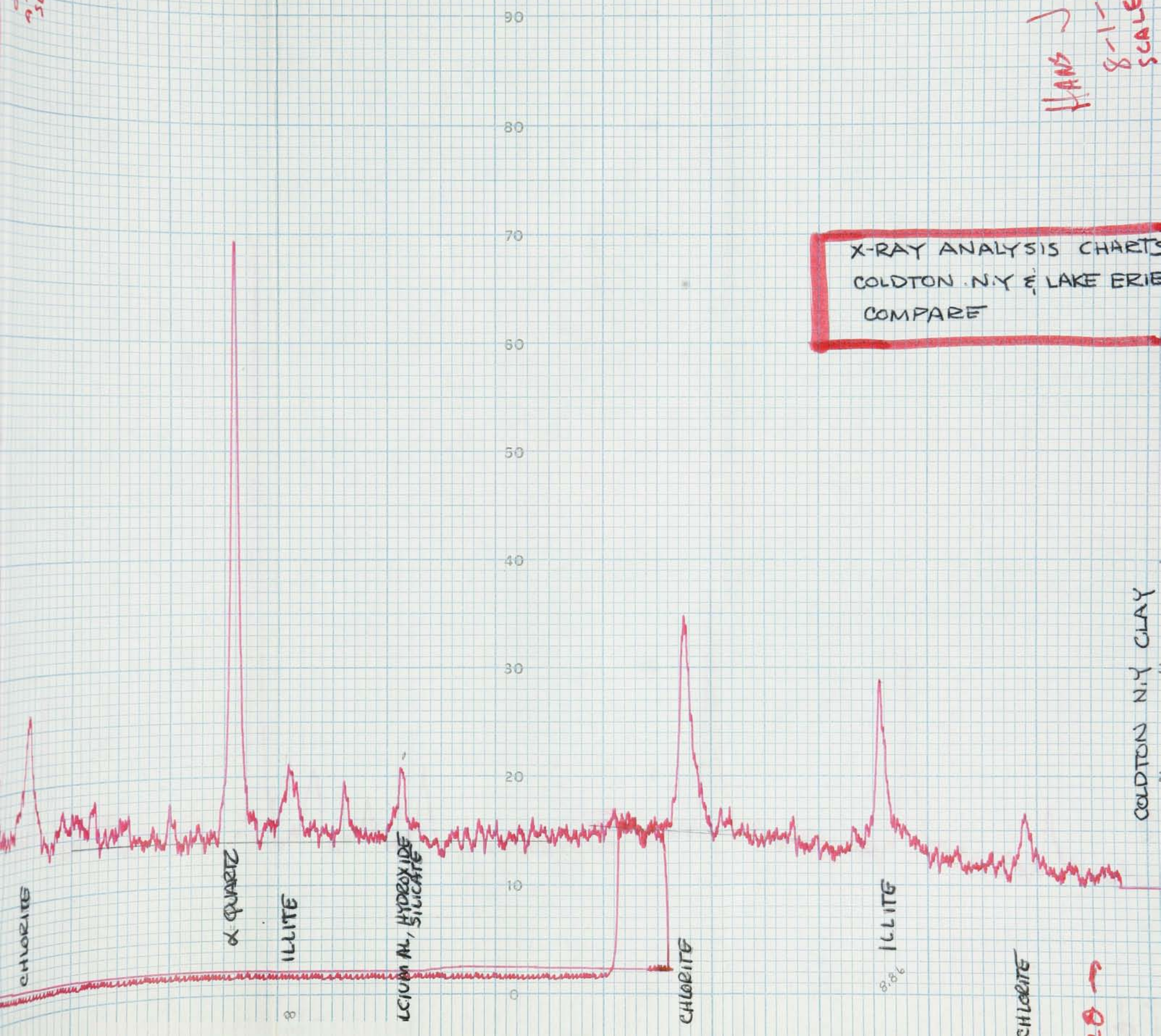




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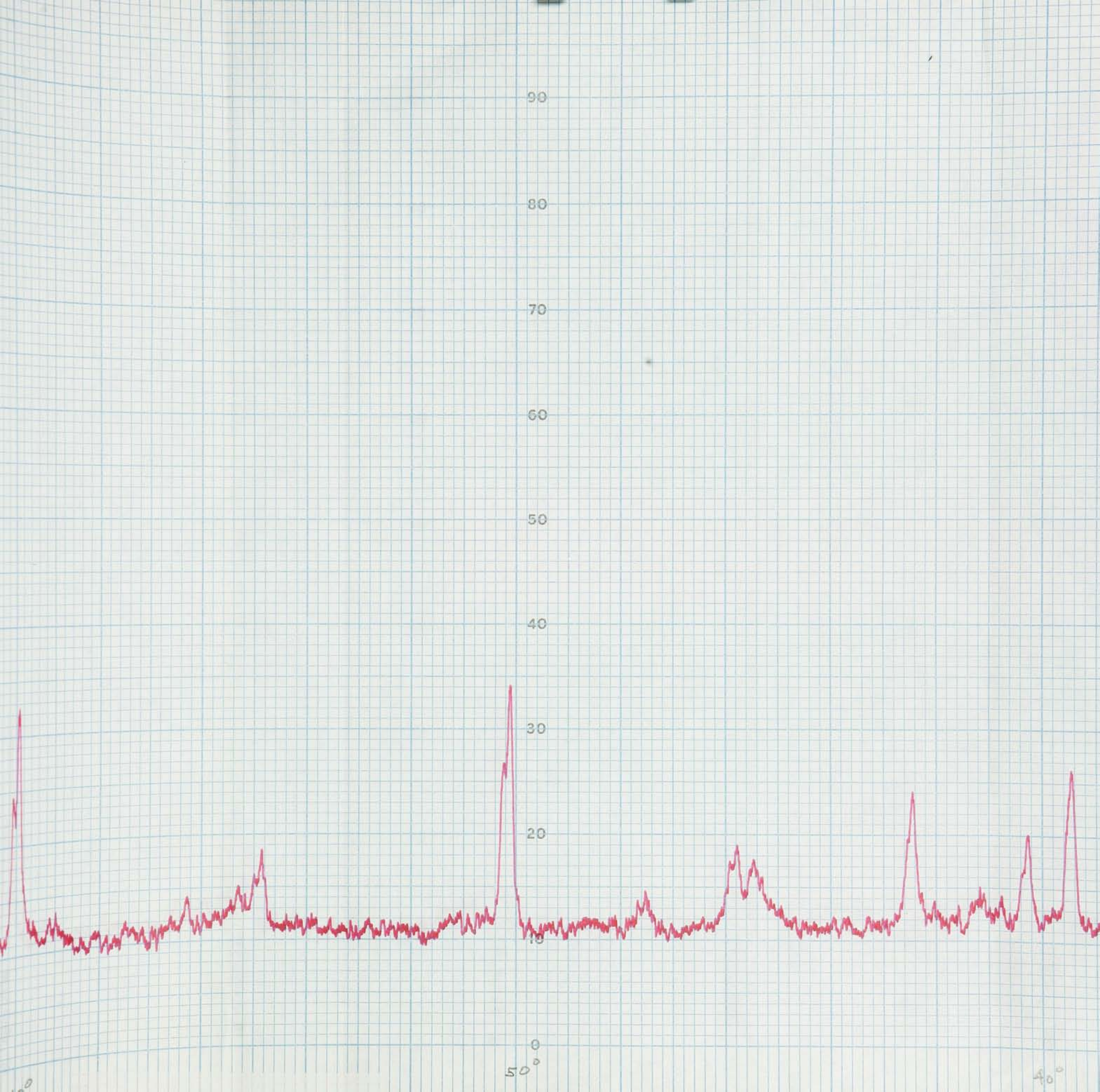
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COLDTON N.Y. & LAKE ERIE
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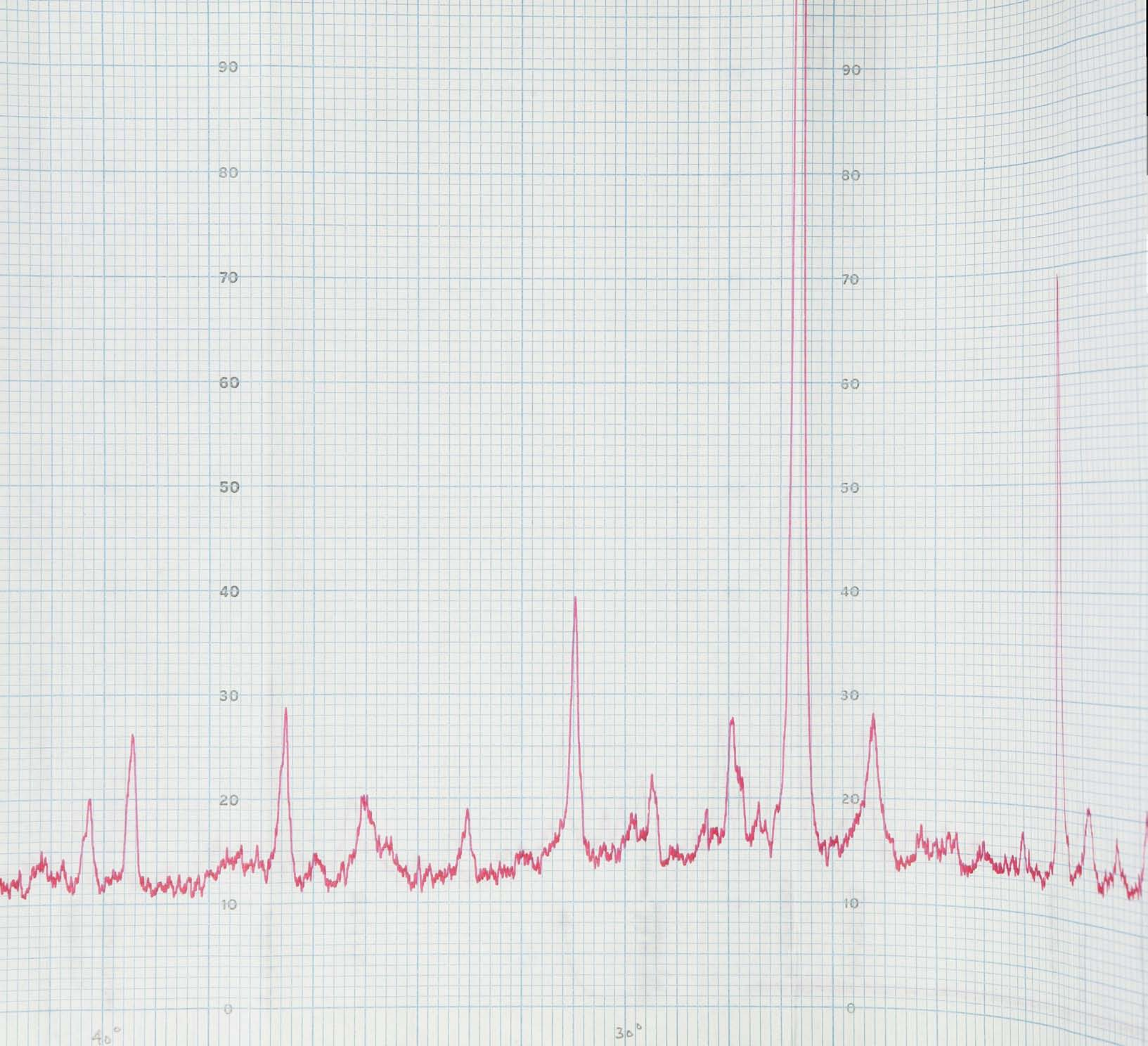


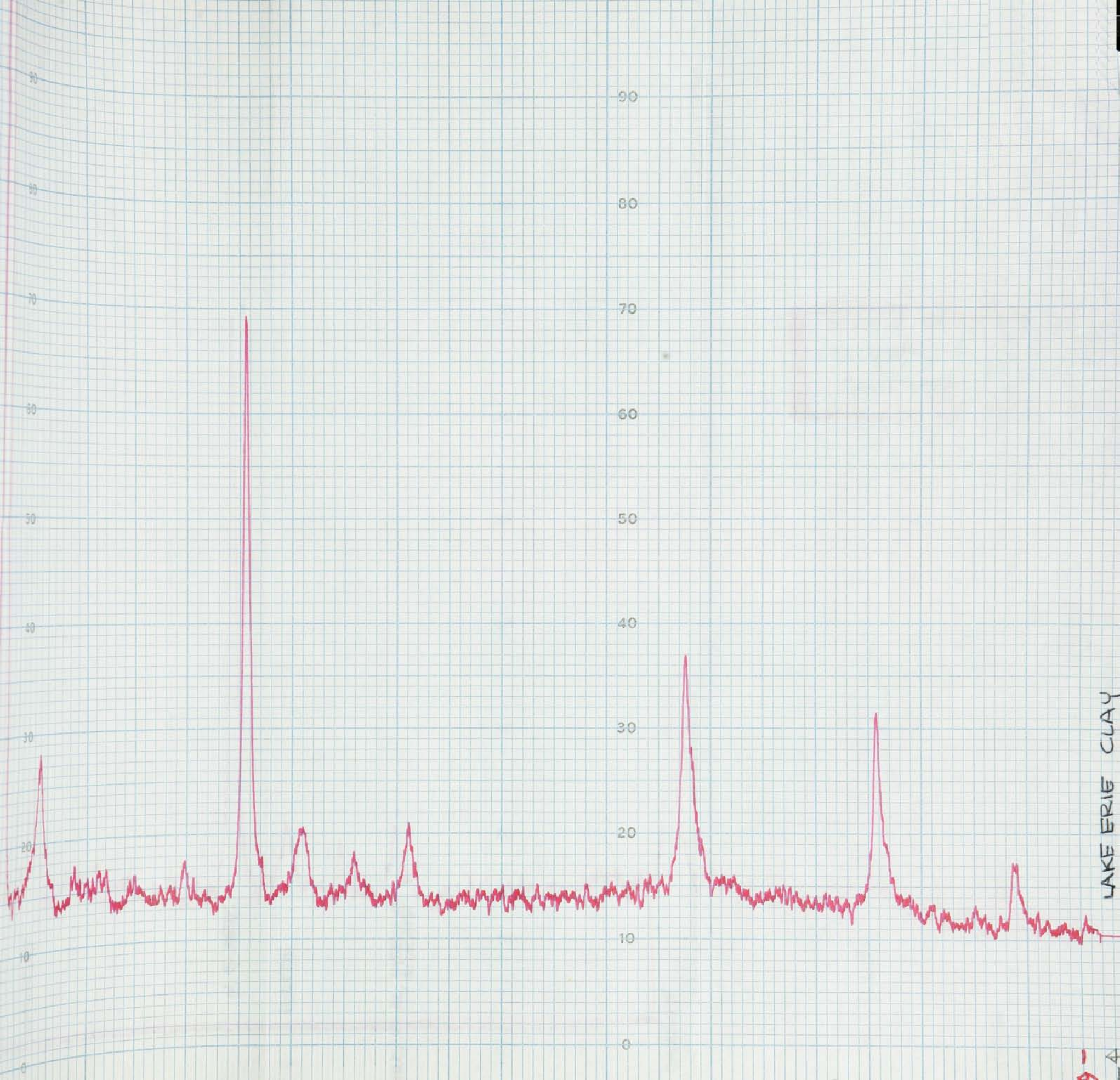
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LAKE ERIE CLAY